National Institute of Environmental Health Sciences

Correlation between meteorological factors and tick-borne encephalitis incidence in the Czech Republic

Author(s): Daniel M, Kriz B, Danielova V, Valter J, Kott I
Year: 2008
Journal: Parasitology Research. 103 (Suppl 1): S97-107

Abstract:

The objective was to discover whether there any demonstrable relationships exist between the incidence of human tick-borne encephalitis (TBE) cases and current meteorological factors and to specify their character. Epidemiological data were extracted from the EPIDAT database (National Institute of Public Health, Prague). Analyzed were a total of 4,613 TBE cases registered in the whole Czech Republic (1994-2001) and 4,637 cases registered in the territory of Bohemia (1994-2004). Meteorological data were from the database of the Czech Hydrometeorological Institute in Prague. A linear relationship has been found between TBE incidence and temperature factors in all the years under study. Lagged cross correlation was used (with the lags in time respective to incubation period from infected tick attack to initial TBE symptoms) and close relations were found for daily mean air temperature and lags 6-14 days (with a peak of 9 days). Effects of the current course of the meteorological situation (as well as long-term year-to-year changes) on TBE incidence are, foremost, mediated by the influence of climatic factors on Ixodes ricinus ticks and their host-seeking activity; under certain conditions, also by the effects of momentary weather on human behavior as TBE in the Czech Republic is a recreational disease connected with outdoor activities.

Source: http://dx.doi.org/10.1007/s00436-008-1061-x

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Czech Republic

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Tick-borne Disease

Tick-borne Disease: Tick-borne Encephalitis

Resource Type: ☒

format or standard characteristic of resource

Research Article

Timescale: ☒

time period studied

Time Scale Unspecified